PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference S10955WO01	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/JP2004/013989	International filing date *(day/month/year)* 16 September 2004 (16.09.2004)	Priority date *(day/month/year)* 17 September 2003 (17.09.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant SUMITOMO CHEMICAL COMPANY, LIMITED		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 26 June 2006 (26.06.2006)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Masashi Honda e-mail: pt08@wipo.int

Form PCT/IB/373 (January 2004)

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)*
Applicant's or agent's file reference S10955WO01	FOR FURTHER ACTION See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/013989	16.09.2004	17.09.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant
SUMITOMO CHEMICAL COMPANY, LIMITED

1. This opinion contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☒	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☒	Box No. VIII	Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP Facsimile No.	Authorized officer Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☒ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☒ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed.

☒ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 23,24,26,27,29,31-33,35,36,38,40

because:

☒ the said international application, or the said claims Nos. 23,24,26,27,29,31-33,35,36,38,40 relate to the following subject matter which does not require an international preliminary examination (*specify*):

Claims 23, 24, 26, 27, 29, 31-33, 35, 36, 38, and 40 describe inventions related to methods for treatment of the human body by therapy.

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____ are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 23,24,26,27,29,31-33,35,36,38,40

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form
- ☐ has not been furnished
- ☐ does not comply with the standard

the computer readable form
- ☐ has not been furnished
- ☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

   ☐ paid additional fees

   ☐ paid additional fees under protest

   ☐ not paid additional fees

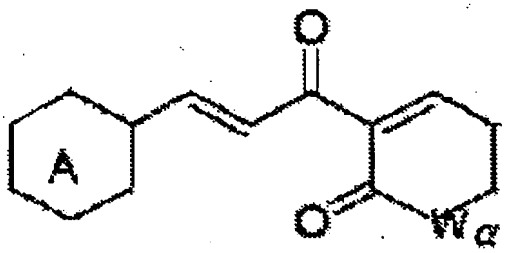
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

The technical feature common to the inventions of claims 1-22, 25, 28, 30, 34, 37, 39, 41, and 42 is compounds having as a partial structure ring structures represented by the general formula at right (wherein A is a benzene ring or a pyridine ring; and W_α is O or N), but compounds having such partial structures are publicly known (see WO 01/79187 A2 (Cytovia, Inc.) 25 October 2001, for example).



Such being the case, the inventions of claims 1-22, 25, 28, 30, 34, 37, 39, 41, and 42 have no common technical feature beyond the prior art, and the inventions of claims 1-22, 25, 28, 30, 34, 37, 39, 41, and 42 are therefore not so linked as to form a single general inventive concept.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

   ☐ all parts

   ☒ the parts relating to claims Nos. 1-22,25,28,30,34,37,39,41,42

WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-5, 7, 8, 10-13, 15-21, 25,2 8, 30, 34, 37, 39, 41, 42	YES
	Claims	6, 9, 14, 22	NO
Inventive step (IS)	Claims	1-5, 7, 8, 10-13, 15-21, 25, 28, 30, 34, 37, 39, 41, 42	YES
	Claims	6, 9, 14, 22	NO
Industrial applicability (IA)	Claims	1-22, 25, 28, 30, 34, 37, 39, 41, 42	YES
	Claims		NO

2. Citations and explanations:

List of documents

Document 1:
JP 2001-89412 A (Otsuka Pharmaceutical Co., Ltd.), 03 April 2001, see Example 144 for example (Family: none)

Document 2:
JP 2002-371078 A (Sankyo Co., Ltd.), 26 December 2002, see Table 2 for example (Family: none)

Document 3:
JP 2001-504080 A (Cornell Research Foundation, Inc.), 27 March 2001 & WO 96/22021 A1 & AU 9647586 A & EP 808103 A1

Document 4:
JP 2002-541253 A (SmithKline Beecham Corp.), 03 December 2002 & WO 00/61576 A1 & EP 1169317 A1 & EP 1169317 B1 & AT 231143 E & ES 2187473 T3 & US 6465493 B1

Document 5:
WO 01/79187 A 2 (Cytovia, Inc.), 25 October 2001, CAS RN: see compounds of 369389-17-3, 369389-19-5, 369389-21-9, 369389-63-9, 369389-65-1 & WO 01/79187 A3 & US 2002/010169 A1 & EP 1324993 A2

Document 6:
RACHEDI, Y. et al., Synthesis of 4-hydroxy-6-methyl-3-β-arylpropionyl-2-pyrones by selective catalytic hydrogenation of 3-cinnamoyl-4-hydroxy-6-methyl-2-pyrones, Synthetic Communications, 1989, volume 19, number 20, pages 3437-42, CAS RN: see compound of 128145-82-4 & Chemical abstracts 113:58843

(Continued in Supplemental Box No. 1)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/JP2004/013989

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 1 includes an extremely large number of compounds as effective ingredients in medical composites. Nevertheless, there is only a small number of compounds claimed that are supported by the description in the meaning of PCT Article 6 and are disclosed in the meaning of PCT Article 5.

Consequently, in this written opinion, an opinion is provided on the portions supported by the description and disclosed.

An opinion was similarly expressed as above for claims 2-6, 10-12, 15, 16, 19, 20, 25, 28, 30, 34, 37, and 39.

"However,...excluding...the Xc-base" at the end of the definition of the "X_5 group" in claim 12 was interpreted to be a typographical error for "However,...excluding...the Xe-base" upon consideration of the description in the specification, and an opinion was expressed regarding this claim.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

(Supplemental Box No. 1)

Document 7:
JP 41-1412 B1 (Research Institute for Production Development), 03 February 1966, CAS RN: see compound of 5169-90-4 (Family: none)\

Document 8:
JP 50-46666 A (Toray Industries, Inc.), 25 April 1975, CAS RN: see compound of 57339-78-3 (Family: none)

Document 9:
UKITA, Chunoshin et al., In vitro screening of tricarbonylmethane and related compounds for their antitumor effect by cylinder agar plate method, Chemical & Pharmaceutical Bulletin, 1961, volume 8, pages 1016-20, CAS RN: compound of 94578-81-1 & Chemical abstracts 58:48844

Document 10:
KALECHITS, G. V. et al., Synthesis and properties of 3-cinnamoyl-4-hydroxy-2-quinolene, Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii), 2001, volume 71, number 8, pages 1257-1260, CAN RN: compound of 428818-04-6 & Chemical abstracts 136:401624

Document 11:
US 4017633 A (SmithKline Corp.), 12 April 1977 (Family: none)

Document 12:
WO 97/35565 A1 (Toray Industries, Inc.), 02 October 1997 & CA 2222471 AA & AU 9720436 A1 & AU 721881 B2 & EP 841063 A1 & CN 1194580 A & NO 9705439 A & US 6215016 B1

Document 13:
JP 3-503635 A (The Upjohn Co.), 15 August 1991 & WO 89/07939 A2 & WO 89/07939 A3 & AU 8940747 A1 & EP 403535 A1 & DK 9001956 A

Document 14:
JP 9-227547 A (Mitsui Toatsu Chemicals, Inc.), 02 September 1997 (Family: none)

(Continued in Supplemental Box No. 2)

Supplemental Box

Continuation of: Box V

(Supplemental Box No. 2)

Documents 1-4
Claims 1-22, 25, 28, 30, 34, 37, 39, 41, 42

The inventions described in claims 1-22, 25, 28, 30, 34, 37, 39, 41, and 42 appear to be novel and to involve an inventive step over documents 1-4 cited in the ISR.

Although the compound described in document 1 shows a collagen production inhibitory effect, its structure differs from that of the compound described in claim 1 (refer to example 144, for example). Document 1 neither describes nor suggests that the compound shows a type I collagen gene transcription inhibitory effects or directly inhibits TGF-β effects.

Although document 2 describes that a compound similar to the compound described in claim 1 shows cytokine production inhibitory effects related to IL-1β and TNFα (refer to table 2, for example), the document neither describes nor suggests that the compound shows type I collagen gene transcription inhibitory effects or inhibits TGF-β effects.

Although a 2-pyridone compound showing collagen production inhibitory effects is described in document 3, it differs in structure from the compound described in claim 1. Document 3 neither describes nor suggests that the compound shows type I collagen gene transcription inhibitory effects or inhibits TGF-β effects.

Although the compound described in document 4 inhibits TGF-β effects, it differs in structure from the compound described in claim 1. Also, document 1 neither describes nor suggests that the compound shows type I collagen gene transcription inhibitory effects.

Documents 5-10
Claims 6, 9, 14, 22

The inventions described in claims 6, 9, 14, and 22 do not appear to be novel or to involve an inventive step based on documents 5-10 cited in the ISR.

Documents 5 and 6 describe a compound equivalent to the compound described in claims 6 and 9.

Document 7 describes a compound equivalent to the compound described in claim 6.

Documents 8 and 9 describe a compound equivalent to the compound described in claim 14.

Document 10 describes a compound equivalent to the compound described in claim 22.

(Continued in Supplemental Box No. 3)

Supplemental Box

Continuation of: Box V

(Supplemental Box No. 3)

Documents 5-14
Claims 1-5, 7, 8, 10-13, 15-21, 25, 28, 30, 34, 37, 39, 41, 42

The inventions described in claims 1-5, 7, 8, 10-13, 15-21, 25, 28, 30, 34, 37, 39, 41, and 42 appear to be novel and to involve an inventive step over documents 5-14 cited in the ISR.

Documents 5-14 do not describe a compound equivalent to the compounds described in claims 5, 8, 11-13, 16, 18, and 20. Also, none of documents 5-14 describe or suggest that their compounds show type I collagen gene transcription inhibitory effects, inhibit TGF-β effects, or relate to treatment effects on fibrosis in tissue or hair growth effects.